

**Notice of Allowability**

Application No.

10/769,605

Examiner

Nicholas A. Smith

Applicant(s)

UZOH ET AL.

Art Unit

1742

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 29 September 2006.
2. ☒ The allowed claim(s) is/are 1,4-7,9-11,13,15,16,20-23,25-27,29,32-34,36 and 37.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |  |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application                      |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input type="checkbox"/> Examiner's Amendment/Comment                               |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|  | 9. <input type="checkbox"/> Other _____.   |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 29 October 2006 has been entered.

### **Status of Claims**

2. Claims 1, 4-7, 9-11, 13, 15-16, 20-23, 25-27, 29, 32-34 and 36-37 remain for examination.

### ***Response to Arguments***

3. Applicant's arguments, see p. 6, line 20 to p. 7, line 14, filed 29 September 2006, with respect to claims 1, 9 and 15 have been fully considered and are persuasive. The 35 U.S.C. § 103 of claims 1, 4-7, 9-11, 13, 15-16, 20-23, 25-27, 29, 32-34 and 36-37 has been withdrawn.

### ***Allowable Subject Matter***

4. Claims 1, 4-7, 9-11, 13, 15-16, 20-23, 25-27, 29, 32-34 and 36-37 are allowed. The following is an examiner's statement of reasons for allowance: Dubin et al. '821 (US Patent 6,432,821), Dubin et al. '192 (US Patent 5,972,192) and Uzoh et al. (US 2002/0061715) do not disclose, teach or suggest the claim limitations in claims, 1, 9 and 15 wherein a method of electrochemically filling cavities on a wafer surface to form a

substantially planar conductive layer comprising applying a first cathode current to form a first conductive layer, treating a surface of the first conductive layer by applying a first anodic current waveform having a first number of pulses after applying the first cathode current, applying a second cathode current to form a second conductive layer on the first conductive layer after applying the first anodic current waveform, treating a surface of the second conductive layer by applying a second anodic current waveform having a second number of pulses after applying the second cathodic current, and wherein the second anodic current waveform has a longer duration than the first anodic current waveform and wherein the second number is greater than the first number, in combination with the other recited claim limitations. While Dubin et al. '821 teaches of a number of pulses of anodic current after a cathodic current (Dubin et al. '821, Figure 3), Dubin et al. '821 teaches of a change in the length of time for cathodic steps (Dubin et al. '821, Figure 7), Dubin et al. does not disclose a first anodic waveform with a first number of pulses that is limited between cathodic currents and does not disclose a second anodic waveform with a second number of pulses that is limited between cathodic currents wherein second number is greater than the first number.

Furthermore, while Dubin et al. '821 teaches optimization of current densities and length of times of each step (col. 6, lines 37-45) of a multi-step electroplating process, Dubin et al. '821 does not disclose of the above claimed limitation. Furthermore, while Dubin et al. '192 teaches pulsed or forward-reverse electroplating (example 2), Dubin et al. '192 does not disclose of the above claimed limitation.


5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas A. Smith whose telephone number is (571)-272-8760. The examiner can normally be reached on 8:30 AM to 5:00 PM, Monday through Friday.

7. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571)-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
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